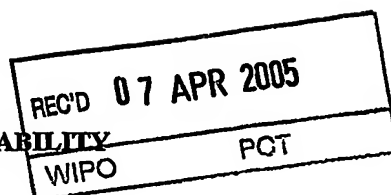


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 5408/2J111WO	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US03/17882	International filing date (day/month/year) 06 June 2003 (06.06.2003)	Priority date (day/month/year) 20 December 2002 (20.12.2002)	
International Patent Classification (IPC) or national classification and IPC IPC(7): C02F 1/50 and US Cl.: 210/696			
Applicant LONZA INC.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of ___ sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 16 June 2004 (16.06.2004)		Date of completion of this report 21 March 2005 (21.03.2005)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer Peter A. Hruskoci Telephone No. 571-272-0987	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US03/17882

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☒ the description:
 - pages 1-15 _____ as originally filed/furnished
 - pages* NONE _____ received by this Authority on _____
 - pages* NONE _____ received by this Authority on _____
- ☒ the claims:
 - pages 16-18 _____ as originally filed/furnished
 - pages* NONE _____ as amended (together with any statement) under Article 19
 - pages* NONE _____ received by this Authority on _____
 - pages* NONE _____ received by this Authority on _____
- ☒ the drawings:
 - pages 1-5 _____ as originally filed/furnished
 - pages* NONE _____ received by this Authority on _____
 - pages* NONE _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US03/17882**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>1-18</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-18</u>	NO
Industrial Applicability (IA)	Claims <u>1-18</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)

Claims 1-6, 9-13, and 16 lack an inventive step under PCT Article 33(3) as being obvious over Hight et al. 5,662,940. Hight et al. disclose (see col. 2 line 59 through col. 3 line 42, col. 9 line 30 through col. 11 line 38, and col. 30 lines 33-64) a method of adding chlorinated hydantoin to an aqueous medium substantially as claimed. The claims differ from Hight et al. by reciting that the method disintegrates biofilm, flocculent bulked sludge, or bulked biologically active sludge in the aqueous medium. It is submitted that the control of the microbial deposits or biofouling in Hight et al. would appear to include the disintegration of biofilm and bulked biologically active sludge as in the instant method. It would have been obvious to one skilled in the art to modify the method of Hight et al. by disintegrating the recited biofilm and sludge, to aid in preventing biofouling on surfaces in contact with the aqueous medium. The specific amount of hydantoin added, would have been an obvious matter of process optimization to one skilled in the art, depending on the specific aqueous medium treated and results desired, absent a sufficient showing of unexpected results.

Claims 7, 8, 14, 15, 17, and 18 lack an inventive step under PCT Article 33(3) as being obvious over Hight et al. as applied above, and further in view of Sweeny 5,565,109. The claims differ from Hight et al. as applied above by reciting that the chlorinated hydantoin is formed in situ in the aqueous medium from a chlorine source and an alkylated hydantoin. Sweeny disclose (see col. 1 line 56 through col. 3 line 48) that it is known in the art to form a biocide in situ by adding hypochlorite and dimethylhydantoin to the aqueous medium, to enhance bactericidal efficacy of the hypochlorite. It would have been obvious to one skilled in the art to modify the method of Hight et al. by forming the recited chlorinated hydantoin in situ in the aqueous medium in view of the teachings of Sweeny, to aid in preventing biofouling in the aqueous medium. The specific molar ratio utilized, would have been an obvious matter of process optimization to one skilled in the art, depending on the specific aqueous medium treated and results desired, absent a sufficient showing of unexpected results.

Claims 1-18 meet the criteria set out in PCT Article 33(2), because the prior art does not disclose the method steps recited in the instant claims.

Claims 1-18 have industrial applicability and meet the criteria set out in PCT Article 33(4) because the method can be used in industry to disintegrate biofilm, flocculent bulked sludge, or bulked biologically active sludge.

NEW CITATIONS

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US03/17882

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US03/17882

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 1 is objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claim 1 is indefinite for the following reason(s): In claim 1 "said aqueous medium" lacks clear antecedent basis.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Supplemental Box Relating to Sequence Listing

Continuation of Box No. I, item 2:

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion was established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
- ☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed
- ☐ filed together with the international application in computer readable form
- ☐ furnished subsequently to this Authority for the purposes of search and/or examination
- ☐ received by this Authority as an amendment* on _____

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

* If item 4 in Box No. I applies, the listing and/or table(s) related thereto, which form part of the basis of the report, may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: